

Claims

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1. A method of controlling the transmission power in a cellular radio system comprising terminals (100), base stations (101, 102), and radio network controllers (201, 202), and where transmission power control comprises an outer loop control (209, 210), wherein a radio network controller provides a base station with transmission power controlling information (212), and a closed-loop control, wherein a base station and a terminal control the transmission power according to said controlling information, and which cellular radio system further comprises a load control (207, 208), wherein a radio network controller monitors and balances the use of radio resources in the base stations that operate under it, **characterized** in that to control the transmission power in a macrodiversity connection where a given branch goes between the serving radio network controller (201) and the terminal (100) through the drift radio network controller (202) and the drift base station (102), it comprises the steps of:
 - 15 transmitting information (211) limiting the transmission power in said macrodiversity connection branch from the drift radio network controller to the serving radio network controller,
 - transmitting the information (212) controlling the transmission power of said macrodiversity connection branch from the serving radio network controller to the drift radio network controller, and
 - 20 transmitting information (213) controlling the transmission power of said macrodiversity connection branch from the drift radio network controller to the drift base station.
2. A method according to claim 1, **characterized** in that for transmitting the information (212) controlling the transmission power of said macrodiversity connection branch from the serving radio network controller (201) to the drift radio network controller (202) a special data transmission form (206), meant for data transmission between radio network controllers, is used whereupon the transformation into a data transmission form (105*) between a radio network controller and a base station takes place in the drift radio network controller (202).
3. A method according to claim 1, **characterized** in that said information (211) limiting the transmission power in said macrodiversity connection branch comprises the

downlink transmission power minimum and maximum, as well as the uplink Eb/N0 ratio target value minimum and maximum.

4. A method according to claim 1, **characterized** in that said information (212, 213) controlling the transmission power in said macrodiversity connection branch comprises the downlink transmission power minimum and maximum and the uplink Eb/N0 ratio target value.

5. A method according to claim 1, **characterized** in that the information (211) limiting the transmission power in said macrodiversity connection branch is transmitted therein from the drift radio network controller to the serving radio network controller as response to an observation of a change in the load made by the drift radio network controller.

15 6. A radio network controller (400) for controlling the operation of base stations in a cellular radio system comprising terminals, base stations, and radio network controllers, which radio network controller comprises means (403) for establishing information, according to outer-loop control, controlling the transmission power and for transmitting it to a base station, and means (409) for controlling the load by monitoring and balancing the use of radio resources in the base stations which operate under it, **characterized** in that to control the transmission power in a macrodiversity connection, a given branch of which goes between a radio network controller (201) and a terminal (100) through a drift radio network controller (202) and a drift base station (102), it comprises

20 25 means (410, 411, 412, 413, 414) for establishing information resulting from load control and limiting the transmission power in said macrodiversity connection branch and for transmitting it from the drift radio network controller to the serving radio network controller,

30 means (404, 405, 406, 407, 408) for establishing information controlling the transmission power in said macrodiversity connection branch and for transmitting it from the serving radio network controller to the drift radio network controller, and means (404, 405, 406, 407, 408) for establishing information controlling the transmission power of the drift base station on the basis of the information received from the serving radio network controller and for transmitting it to the drift base station.

7. A cellular radio system comprising terminals (100), base stations (101, 102), and radio network controllers (201, 202) and comprising, in at least two radio network controllers,

means (209, 210) for establishing information, according to outer-loop control,

5 controlling the transmission power and for transmitting it to a base station, and means (207, 208) for controlling the load by monitoring and balancing the use of radio resources in the base stations that operate under it, **characterized** in that to control the transmission power in a macrodiversity connection, a given branch of which goes between the first radio network controller (201) and the terminal (100) through the

10 second radio network controller (202) and the base station (102), it comprises,

in the second radio network controller (202), means (208) for establishing information (211) resulting from load control and limiting the transmission power and for transmitting it to the first radio network controller (201),

in the first radio network controller (201), means (209) for establishing information (212) controlling the transmission power and for transmitting it to the second radio network controller (202), and

15 in the second radio network controller (202), means (210) for establishing information (213) controlling the transmission power of the base station on the basis of the controlling information (212) received from the first radio network controller (201) and

20 for transmitting it to the base station (102).

8. A method of changing the connection parameters in a cellular radio system comprising terminals (100), base stations (101, 102), and radio network controllers (201, 202), and where at least one terminal is in a macrodiversity connection, wherein

25 at least one diversity branch goes between the serving radio network controller (201) and the terminal (100) through the drift radio network controller (202) and the drift base station (102) and which further comprises a load control (207, 208) wherein the radio network controller monitors and balances the use of radio resources in the base stations that operate under it, and a call control (209, 210) wherein the serving radio network controller sets and changes the connection parameters of its connections,

30 being **characterized** in that it comprises observing that the drift radio network controller load control demands a change in the connection parameters of the terminal which is communicating through the base station that operates under it,

and controlling the serving radio network controller to change the connection parameters of said terminal.

9. A cellular radio system comprising terminals (100), base stations (101, 102), and 5 radio network controllers (201, 202) and which comprises, in at least two radio network controllers, means (209, 210) for controlling the calls, means (207, 208) for controlling the load by monitoring and balancing the use of radio resources in the base stations that operate under it, **characterized** in that to control a call in a macrodiversity connection, a given branch of which goes between the first 10 radio network controller (201) and the terminal (100) through the second radio network controller (202) and the base station (102), it comprises, in the second radio network controller (202), means (208) for observing the need to change connection parameters (211), resulting from load control, and for transmitting the information to the first radio network controller (201),

15 10. A system according to claim 9, **characterized** in that it further comprises, in the first radio network controller (201), means (209) for changing the call connection parameters.

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